QUENTIN BRISSAUD - PhD

PROFILE

PHONE	6267556169
EMAIL	quentinbrissaud@gmail.com
ADDRESS	South Pasadena, CA
WEBSITE	quentinbrissaud.github.io
LANGUAGES	French (native) English (fluent)
CITIZENSHIP	French US Green card holder through marriage

EDUCATION

PhD, Geophysics
2014 - 2017

Institut supérieur de l'aéronautique & espace, Toulouse, FR

Numerical modeling of atmospheric waves due to Earth/Ocean/Atmosphere couplings and applications

Master of Science, Engineering
2010 - 2014

INSA TOULOUSE, Toulouse, FR

Optimization, CFD, Structural mechanics, Image processing, Data Assimilation, and Wave theory

Research Master, Mathematics
2013 - 2014

Paul-Sabatier Univesity, Toulouse, FR

Nonlinear dispersive and elliptic equations

SKILLS

Programming languages

Python, Matlab, C, Fortran, SQL, Git

Python libraries

Sklearn, Tensorflow, Pandas, Matplotlib, multiprocessing

Machine-learning & probabilistic models

CNNs, U-net, Auto-encoders, Transformers, Random-forests, Gaussian Mixture Models, PCA analysis

Scientific background

Computational Fluid Dynamics, Seismic and acoustic wave propagation, Galerkin numerical models, Bayesian models

Communication

> 25 presentations at international conferences, ~20 peer-reviewed scientific publications (including Science), Bachelor-level teaching, MSc and PhD students supervision

OVERVIEW

- Expertise in numerical,, and Timeseries/Image ML methods
- ML/Scientific projects with high societal impacts
- Leadership experience in interdisciplinary scientific projects
- Curious with strong scientific rigor

EXPERIENCE

Research scientist
since Sept 2020

NORSAR, Kjeller, NO

- Led design and implementation of data-oriented solutions for a wide variety of applications: early-warning tsunami system, realtime military conflict monitoring, volcanic eruptions
- Coordinated projects across teams from various fields (seismology, acoustics, software engineers)
- Communication with external stakeholders translating business need into data-based solutions
- Experience with timeseries and image segmentation (Physics-Informed CNNs/Transformers, Gaussian Mixture Model, XGBoost, auto-encoders, transfer learning)
- Deployed Docker/Bokeh for seismic/sound wave monitoring
- Raised >1 M$ for research with high-societal impact
- Released open-source codes for ML applications and atmospheric wave propagation
- Regular guest lecturer at the University of Oslo, PhD and MsC student supervision

Post-doctoral scholar
2017 - 2020

California Institute of Technology, Pasadena, USA

- Implemented machine-learning techniques (SVM, Random forest, XGBoost) for the statistical analysis of seismic risks
- Released an open-source numerical modeling tool used in 10 publications
- Led collaboration between Caltech & NASA which resulted in the first detection of an earthquake from the high atmosphere
- Mentored PhD student on physics and numerical modeling
- Led communication efforts (ABC, CNN, NASA) with journalists to advertise my research collaborations
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PhD student
2014 - 2017

Institut supérieur de l'aéronautique & espace, Toulouse, FR

- Developed state-of-the-art numerical wave-propagation modeling tools in C/Fortran
- Paralellized Fortran codes using MPI libraries for large-scale numerical computations
- Git-hub contributor to the most popular open-source seismic wave propagation software

AWARDS & FELLOWSHIPS

2022 Young Researcher Award - Research Council of Norway

2020 Member Young Profesionnal Network CTBTO

2017 Caltech Seismolab fellowship

2017 Geophysical Journal International, Author Awards

SELECTED PUBLICATIONS

Exposing military attacks in the 2022 Russia-Ukraine conflict using seismic array data.
B Dando, B Goertz-Allmann, **Q Brissaud**, A Köhler, J Schweitzer, & T Kværna.
Nature, in review, 2023.

Near real-time stratospheric circulation diagnostics based on high-latitude infrasound data using a machine learning and stochastics-founded model
M Eggen, [...] **Q Brissaud**, et al.
Geophysical Research Letters, in review, 2023

Predicting infrasound transmission loss using deep learning
Q Brissaud, et al.
Geophysical Journal International 232 (1), 274-286, 2023

Atmospheric waves and global seismoacoustic observations of the January 2022 Hunga eruption, Tonga
RS Matoza, [...] **Q Brissaud**, et al.
Science 377 (6601), 95-100, 2022

Near-real-time detection of co-seismic ionospheric disturbances using machine learning
Q Brissaud, E Astafyeva
Geophysical Journal International 230 (3), 2117-2130, 2022

The first detection of an earthquake from a balloon using its acoustic signature
Q Brissaud, et al.
Geophysical Research Letter, 2021

Hybrid Galerkin numerical modelling of elastodynamics and compressible Navier–Stokes couplings: applications to seismo-gravito acoustic waves
Q Brissaud, R Martin, RF Garcia, D Komatitsch
Geophysical Journal International 210 (2), 1047-1069, 2017